

## **Title: Choosy Chips**

### **Brief Overview:**

In this unit, students will estimate, count, and gather nutritional information on several brands of chocolate chip cookies. This data will be displayed using bar graphs, line plots, and a circle-ray glyph. Students will share and analyze data to determine which brand of cookies is the best. As a conclusion, the students will write a letter persuading the test coordinator which brand to use.

### **Links to Standards:**

- **Mathematics as Problem Solving**  
Students will demonstrate their ability to solve a real-life problem in a cooperative atmosphere.
- **Mathematics as Communication**  
Students will demonstrate their ability to communicate mathematically. They will read, write, and discuss mathematics.
- **Mathematics as Reasoning**  
Students will demonstrate their ability to communicate mathematically. They will gather evidence and build arguments.
- **Mathematical Connections**  
Students will demonstrate their ability to connect mathematics topics within the discipline and with other disciplines.
- **Estimation**  
Students will demonstrate their ability to apply estimation in working with quantities and problem solving.
- **Number Sense and Numeration**  
Students will demonstrate their ability to construct number meanings using real-world experiences and physical materials.
- **Concepts of Whole Number Operations**  
Students will demonstrate their ability to use various operations and strategies to solve problems.
- **Whole Number Computation**  
Students will demonstrate their ability to add and divide.

- **Measurement**

Students will demonstrate their ability to use appropriate units of measurement and measuring tools in real-world, problem solving situations.

- **Statistics**

Students will demonstrate their ability to collect, organize, and display data using bar graphs, line plots, and circle-ray glyphs. They will interpret and analyze data collected to solve a real-world problem.

**Grade/Level:**

Grades 3-4

**Duration/Length:**

This unit takes approximately 5 days (45-60 minutes each).

**Prerequisite Knowledge:**

Students should have working knowledge of the following skills:

- Estimation
- Bar graphs and line plots
- Addition with regrouping

**Objectives:**

Students will:

- work cooperatively in groups.
- collect, organize, display, and analyze data.
- identify possible solutions for a real-life problem.
- write a letter to persuade.

**Materials/Resources/Printed Materials:**

- 1 bag of chocolate chip cookies per team (different brand per team w/ equal weight)
- calculators
- construction paper strips (6 colors)
- paper plates
- chart paper
- centimeter rulers
- scissors and glue
- highlighters
- Student Resource Sheets 1-4

- Teacher Resource Sheet
- A Bad Case of the Giggles: Kids Favorite Funny Poems by Bruce Lansky
- If You Give A Mouse A Cookie by Laura Joffe Numeroff
- optional: food labels

## **Development/Procedures:**

### **Day 1:**

- Discuss contextual situation (see writing prompt).
- Distribute 1 bag of cookies per team and Resource Sheet #1 per student.
- Discuss nutritional facts such as calories, fat, and sodium content and examine location of information.
- Show and discuss other food labels.
- Read poem, “I Ate a Ton of Sugar,” by Alice Gilbert.
- Each team member estimates total number of cookies in the bag. (Do not open bag yet.) Teams discuss estimation strategies. Share as a class.
- Each team opens bag and counts the actual number of cookies. Record.
- Teams randomly select 5-6 cookies (depending on the group size) from a package.
- As a class, determine the best method of counting the chips (breaking apart the cookie, counting chips on top, counting chips on bottom, or counting all chips without breaking cookie).
- Each team member counts the number of chips in one cookie and records on Resource Sheet #1.
- Have one team member from each group record on class chart. As information is displayed, be sure all students record data from other groups.

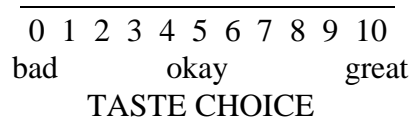
### **Day 2:**

- Teacher models procedure to find average.
- Distribute Student Resource Sheet #2.
- Students determine average number of chips per cookie for each group. Record.
- Review labels.
- Groups determine the total calories, fat, sodium, and cost per cookie. (Note: Serving size may vary.)
- One team member from each group records information on class chart. Students record information from all groups.
- Assign each team one criteria (chips, calories, etc.) to construct a bar graph showing the class data.
- Display graphs and discuss.

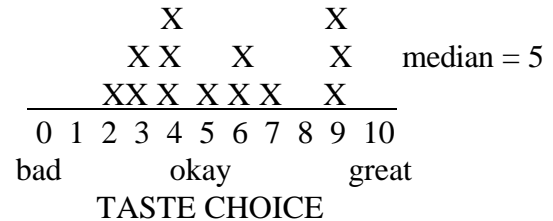
### Day 3:

- Teacher Preparation: Prior to activity, on large chart paper, set up a line plot ranging from 0 - 10 for each cookie brand.

Set-up example:



Completed example: Choice A



- Place cookies with the line plot charts around the room for students to taste and rank. To rank, students place an "X" above their choice. All students should taste all brands.
- As a class, determine median of each line plot. Students record on Resource Sheet #1.
- Display and discuss key for circle-ray glyph:  
per cookie
  - 1 cm = 1 chip (brown strip)
  - 1 cm = 5 calories (blue strip)
  - 1 cm = 10 mg. sodium (green strip)
  - 1 cm = 1 gram fat (yellow strip)
  - 1 cm = 1 cent (red strip)Dots in the center of the paper plate = the number of cookies per bag.
- Distribute materials. Students assemble circle-ray glyphs. (Directions for constructing glyph: Cut colored strips according to data. Glue strips around paper plate. Color dots to look like chips in center of plate.)
- Groups write three sentences to summarize glyph data.
- Display glyphs and discuss.

### Day 4:

- Using large class data chart, discuss advantages and disadvantages of each brand. Rank each criteria with a "+" or "-" sign. Record on individual charts.
- Distribute writing prompt (Resource Sheet #3). Students read and follow directions.

**Day 5:**

- Distribute peer response (Resource Sheet #4). Allow 7 minutes for each partner.
- Students use peer response to revise rough draft.
- Students write final draft and proofread.

**Performance Assessment:**

Glyph and letter are scored using attached rubrics. (See Teacher Resource Sheet.)

**Extension/Follow Up:**

- Read If You Give A Mouse A Cookie by Laura Joffe Numeroff.
- Complete unit activities using other foods or drinks.
- Students conduct surveys to determine school favorites.
- Design poster or advertisement promoting their choice.

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# CHOOZY CHIPS

Cookie Brand \_\_\_\_\_

Estimated Amount of Cookies per bag \_\_\_\_\_

Cookie Brand	Cookies per bag	Chips per Cookie	Calories per Cookie	Fat per Cookie	Sodium per Cookie	Price per Cookie	Taste Choice-Median
<b>A</b> _____							
<b>B</b> _____							
<b>C</b> _____							
<b>D</b> _____							
<b>E</b> _____							

# CHOOSY CHIPS

<b>A</b> _____ 1 _____ 2 _____ 3 _____ 4 _____ <b>Total</b> _____ <b>Average</b> _____	<b>B</b> _____ 1 _____ 2 _____ 3 _____ 4 _____ <b>Total</b> _____ <b>Average</b> _____	<b>C</b> _____ 1 _____ 2 _____ 3 _____ 4 _____ <b>Total</b> _____ <b>Average</b> _____
<b>D</b> _____ 1 _____ 2 _____ 3 _____ 4 _____ <b>Total</b> _____ <b>Average</b> _____	<b>E</b> _____ 1 _____ 2 _____ 3 _____ 4 _____ <b>Total</b> _____ <b>Average</b> _____	

### Student Resource Sheet #3

#### Writing Prompt:

Your school test coordinator is considering using chocolate chip cookies as a snack during testing week. You have completed several activities to compare different brands.

Write a letter persuading the school test coordinator which brand of chocolate chip cookies to use. Before you begin to write, think about the cost, taste, cookies per bag, and chips per cookie. Also consider calories, sodium, and fat content. Be sure to write in complete sentences and use correct grammar, spelling, punctuation, and capitalization. Use correct letter format, including both a topic and a concluding sentence.

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#### Vocabulary Cues:

nutritional    expensive    flavor    least

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#### Getting ready to write:

Reread the prompt.

Highlight the F-A-T-P\* sentence.

\* F- Form (ex. paragraph, letter)

A- Audience (ex. to whom you are writing)

T- Topic (ex. what you are writing about)

P- Purpose (ex. to persuade, to inform, to express personal ideas)

Put a check over each of the things you are to think about BEFORE you begin to write.

Refer to criteria ranking (+/-) on Student Resource Sheet #1.

Organize your ideas using a graphic organizer.

Use your ideas to help you write your first draft.

Write your first draft on lined paper.



Student Resource Sheet #4  
Peer Response Form

Step One: Read your letter aloud to your partner.

Step Two: Ask your partner the questions listed below. Record your partner's responses in the spaces.

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1. According to my topic sentence, why am I writing to the school test coordinator?
2. According to my letter, which brand of cookie did I like best?
3. What reasons did I give for my choice?
4. If you were the school test coordinator, what in my letter would persuade you?
5. How did I summarize my position?
6. What in my letter was the easiest for you to understand?
7. What was difficult for you to understand?
8. What should I change in my letter to make it better?

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Step Three: Look at your letter with your partner.

Circle any words that are misspelled.

Underline any letter that needs to be capitalized.

Make sure each sentence ends with a mark of punctuation.

Place an X on any part of the letter that is not in the correct place.

Step Four: Make any needed changes to your first draft.

Teacher Resource Sheet  
Scoring Tools

**Glyph display**

- 3 Accurate display of collected data on circle-ray glyph. Includes appropriate title and key. Conclusions are correct and address each of the informational criteria.
- 2 Mostly accurate display of data on glyph. Includes title and key. Conclusions correctly address at least three informational criteria.
- 1 Partially accurate data on glyph. Includes a title or a key. Conclusions correctly address less than three informational criteria.
- 0 Inaccurate display of data. Missing title and key. Conclusions are missing or inaccurate.  
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**Letter- Scoring Rule: Writing to Persuade**

- 2 Consistently addresses audience's needs by identifying a clear position and fully supporting or refuting that position with relevant information. Text is uniformly organized, and language choices often enhance the text.
- 1 Sometimes addresses audience's needs by identifying a somewhat clear position and partially supporting or refuting that position with relevant information. Text is generally organized, and language choices sometimes enhance the text.
- 0 Rarely or never addresses audience's needs by failing to identify a clear position or failing to adequately support or refute a position that has been identified. Text lacks organization, and language choices seldom, if ever, enhance the text.

**Letter- Language in Use Rule**

- 2 Consistently uses word and sentence order and language choices to express meaning with style and tone. Text conveys uniform impression of correctness\* and any errors that are present represent risk-taking.
- 1 Sometimes uses word and sentence order and language choices to express meaning with style and tone. Text generally conveys impression of correctness\* and errors may or may not represent risk-taking.
- 0 Rarely or never uses word and sentence order and language choices to express meaning with style and tone. Text appears error-ridden.  
\* correct usage, punctuation, spelling, and capitalization